

A NOTE ON THE DIATOM *BACTERIASTRUM TENUE*
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ABSTRACT

An account is given of variations in the morphology of specimens of the diatom *Bacteriastrum tenue* Steemann Nielsen, which were not indicated in the original description. The species is compared with *B. minus* Karsten.

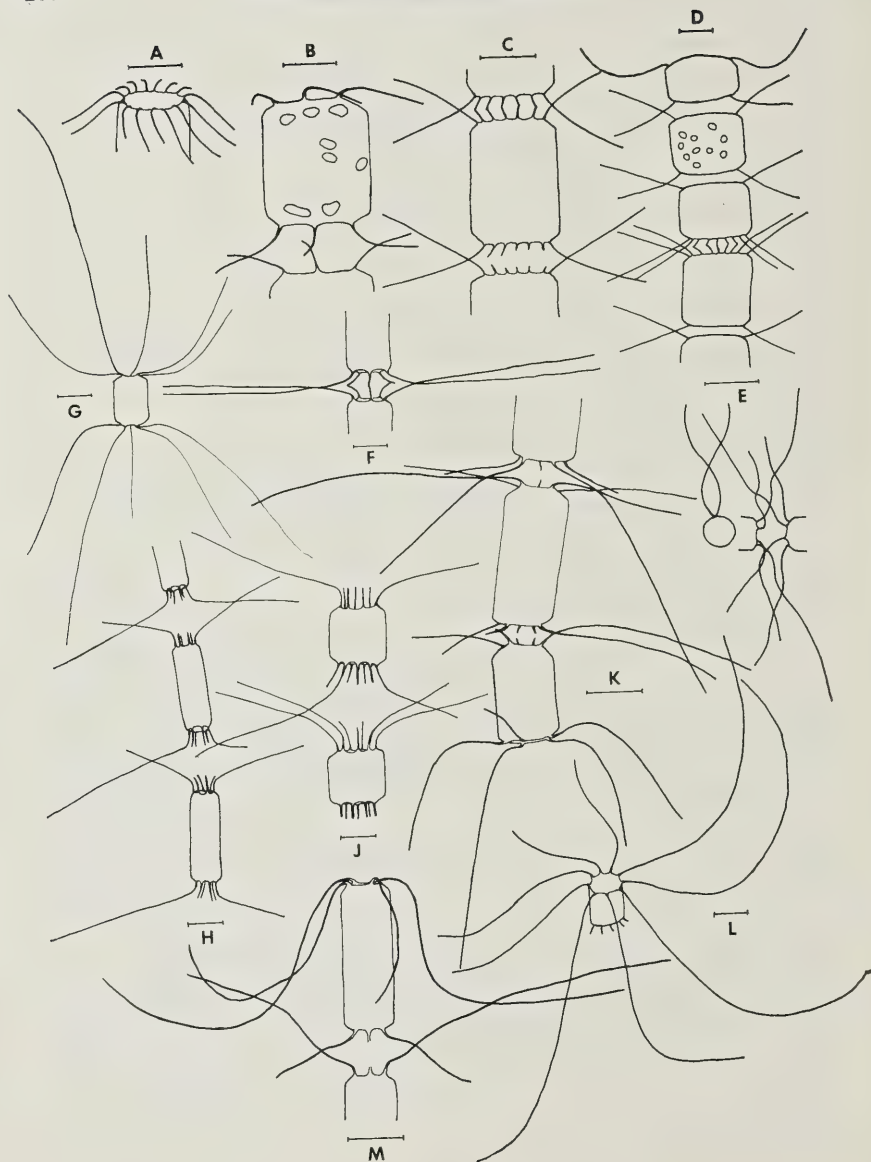
The diatom species *Bacteriastrum tenue* was first described by Steemann Nielsen in 1931, from phytoplankton samples collected in the N.E. Indian ocean during the Carlsberg Foundation's Expedition of 1928–1930.

Since then *B. tenue* does not appear to have been recorded: Wood (1963), Taylor (1967) and Nel (1968). The present author has, however, found it in 44 out of 83 phytoplankton samples collected in the Agulhas current during International Geophysical Year, 1958.

The species shows considerable variation in cell dimensions, size of aperture and disposition of setae, not indicated in Steemann Nielsen's original account.

He described *B. tenue* as having elongate cylindrical cells, 6–8 μ in diameter, forming short chains with very large apertures, twice the valve diameter in size; with each valve bearing 4 setae on small processes adjoining the margin, the setae running at first almost parallel to the pervalvar axis, then curving obliquely outwards and crossing the setae of the adjacent cell at an acute angle. He writes: "Special terminal setae were not observed; once I observed a supposed terminal valve without setae. One finds mostly broken chains. Many small chromatophores. Because of its small size and the hyaline nature of the cell wall this species is easily overlooked."

Entire chains of *B. tenue* have not been observed by the present author, the longest fragment recorded being a chain of 6 inner cells. Terminal cells in chain fragments are identified by the disposition of the setae of the outer valve, (Fig. 1, B, K, L and M), otherwise, in length, thickness and the nature of the base, there is no difference between inner and terminal setae. From the curvature of the end setae, anterior and posterior terminal cells may be identified, (Fig. 1,

FIG. 1. *Bacteriastrum tenue* and *B. minus*.

B, M and K). However the setae appear to be fairly flexible, and sometimes the distinction between anterior and posterior is not really apparent, (Fig. 1, L). The number of setae per valve was found to vary from 4, (Fig. 1, M), to 9, (Fig. 1, L).

The chain aperture varies in size from approximately twice the cell diameter, (Fig. 1, H, which most approximates the specimen illustrated in Steemann Nielsen's account), to approximately half the cell diameter, (Fig. 1, K). With a decrease in aperture size, there is a decrease in the length of the basal part of the setae which runs almost parallel to the pervalvar axis.

Cell diameters of $7-23\mu$ were recorded, and the cell length varied from approximately three times the diameter to equal to the diameter.

B. tenue appears to be most closely related to *B. minus* Karsten, (Fig. 1, A, C and D), on the grounds of nature of origin of the base of the setae, the intersection of the setae and the undifferentiated terminal setae. The shape of the cell in broader specimens of *B. tenue* is similar to that of *B. minus*, (Fig. 1, B and C), as is the aperture size in some specimens, (Fig. 1, C and K).

B. tenue differs from *B. minus* in the greater length of the setae, the greater variability of cell dimensions and aperture size and in the smaller number of setae per valve.

The lowest number of setae recorded in N.G.Y. Agulhas current samples of *B. minus* was 12 per valve, and the smallest diameter noted was 12μ ; usually it was $16-22\mu$. In *B. minus*, the apertures appear to be consistently small and the cells never much longer than broad. Further, long chains may be formed, (Ikari [1927]).

In the Agulhas current, *B. minus* was found in 50 out of the 83 phytoplankton samples.

Both *B. minus* and *B. tenue* were at stations throughout the area under survey, on all three of the March, May and August cruises. (For data on the Agulhas I.G.Y. stations, see Zoutendyk [1960].)

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Bacteriastrium tenue and *B. minus*, from NGY stations in the Agulhas current. (For convenience sometimes only setae of one side drawn and/or entire length of setae not shown). A, C and D, *B. minus*: A, part of terminal cell; D, terminal part of chain with 16 setae per valve; C, central part of chain with 12 setae per valve; B, E, F, H-M, *B. tenue*: B and M, anterior terminal parts of chains with 4 setae per valve; L, terminal cell with 9 setae per valve; K, posterior terminal part of chain; H and J, cells from centres of chains; E, specimen with 5 setae per valve, setae unusually sinuose, resulting in configuration shown in valve view; F, specimen in which setae do not diverge after crossing; G, solitary cell of *B. tenue*? (The scale line indicates 10μ).

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